3 Using Hypersignal®-Macro Series Software

Overview

Some of the sections listed below are more or less reprinted from sections 3.1 through 3.10, and 4.1 through 4.10, of the Hypersignal-Macro Series Users Manual, but with the addition of information helpful in placing the Hypersignal-Macro series software packages in perspective with other Signalogic DSP Software components. Examples include noting differences between User Mode and Engine Mode operation, and precise locations of subjects in all forms of Signalogic DSP Software documentation.

NOTE: Sections reprinted from Hypersignal-Macro Series Users Manual sections 3.1 through 3.10, and sections 4.1 through 4.10, may have material that copyrighted © 1985-1990 by Hyperception, Inc, and/or copyrighted © 1991-1995, by Signalogic, Inc.. All rights are reserved by their respective copyright holders.

Also, these sections provide an alternate source of online Help when using a Hypersignal-Macro series package under Windows, in addition to the native Hypersignal online Help facility. To conveniently access this help when operating Hypersignal software in user mode (see User Mode and Engine Mode, in Signalogic DSP Software System Guide section 1.1, Relationship of Signalogic DSP Software Components), do the following:

1. run the Hypersignal-Macro series software package (Hypersignal-Macro NRT, Hypersignal-Macro, Hypersignal-Macro EX, or Hypersignal-Acoustic) from its Windows icon in the Signalogic DSP Software group in the Program Manager window
2. once the Hypersignal software is running, use the Alt-Tab keyboard sequence to switch back to Progam Manager, leaving the Hypersignal software active
3. select this online Help section, and make it full screen
4. now use Alt-Tab to switch back to Hypersignal; use Alt-Tab again to re-activate the online Help when needed

The sections below assumes that you have already installed the Hypersignal software according to the instructions in Hypersignal-Macro Series Users Manual section 2.1, Installing Hypersignal, or in Signalogic DSP Software System Guide section 3.2.5, Installing and Configuring Hypersignal Software For User Mode Operation. These section can be divided into two basic groups:

- main Hypersignal user-interface
- accomplishing specific tasks in Hypersignal, using one or more of its functions, displays, and instruments

Assuming that a Hypersignal-Macro series software package is up and running, user-interface topics covered include executing Hypersignal with command-line parameters, initial setup and configuration once the software is running, and basic user-interface and system-interface options available in the software, such as keyboard and mouse interface, online Help, data-entry editor, printing screens and waveform displays, invoking external programs, invoking macro programs and functions, and locating waveform files.

Sections focusing on accomplishing specific tasks in Hypersignal have been organized into broad and general categories and thus cover most DSP analysis achievable in Hypersignal. Because of this organization,

some sections may cover more than one individual Hypersignal function or display. For a concise, item-by-item reference to all Hypersignal functions, displays, instruments, data-entry fields, and interactive display commands, see the "Hypersignal-Macro Series Software Reference Guide".

Main Hypersignal User-Interface

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Accomplishing Specific Hypersignal Tasks

Getting Waveforms In and Out of Hypersignal User Mode

Displaying Time Domain Waveforms in Hypersignal User Mode

Interactive Waveform Displays in Hypersignal User Mode

FFT Generation in Hypersignal User Mode

Displaying Frequency Domain Waveforms in Hypersignal User Mode

Waveform Generation and Mathematics in Hypersignal User Mode

DSP/Acquisition Hardware in Hypersignal User Mode

Filter Design in Hypersignal User Mode

Applying Filters in Hypersignal User Mode

Creating Macro Programs and Functions in Hypersignal User Mode

3.1 Command-Line Interface to Hypersignal

To start Hypersignal software, first path to the hard disk drive and subdirectory containing Hypersignal executable files. Then, invoke one of the following batch files (which one you have depends on your software version) by typing:

Table 1 Command-Line Batch Files to Run Hypersignal Software

Batch File	Hypersignal-Macro Series Package
HS [command-line options] <Enter>	(Hypersignal-Macro NRT)
HSM [command-line options] <Enter>	(Hypersignal-Macro)
HSA [command-line options] <Enter>	(Hypersignal-Acoustic)
HSN [command-line options] <Enter>	(Hypersignal-Macro NRT, Nihon Version)
HSMN [command-line options] <Enter>	(Hypersignal-Macro, Nihon Version)
HSAN [command-line options] <Enter>	(Hypersignal-Acoustic, Nihon Version)

The above batch files do the following:

1. first invoke and make memory-resident the Metagraphics graphics driver (first described and in Hypersignal-Macro Series Users Manual section 2.4, Selecting Graphics and Mouse Drivers)
2. run the appropriate Hypersignal software, applying optional command-line parameters if entered after the batch file name

3. upon exit from Hypersignal, remove the graphics driver from system memory, keeping the driver out of your system memory when Hypersignal is not in use

Upon executing Hypersignal software for the first time, a message of the form "cannot find configuration file...Initializing new configuration" should be displayed. This message only appears when executing the software for the first time, because normally the user-environment configuration save file "hsmacro.cnf" (or "hsacous.cnf") will be present as a result of performing an "exit" function after a previous Hypersignal session. However, when running Hypersignal for the first time, no configuration file will be present, requiring that you to specify initial graphics and mouse driver selections.

For more information on Hypersignal configuration files, see Hypersignal-Macro Series Users Manual section 3.7, Updating and Accessing the User-Environment Configuration File, or Configuration Files in Hypersignal, below.

Please see Hypersignal-Macro Series Users Manual section 2.4, Selecting Graphics and Mouse Drivers, or Graphics and Mouse Driver Selection in Hypersignal User Mode below, for detailed information on making driver selections.

NOTE: If a configuration file is not found initially, then before printing the "...not found..." message Hypersignal first looks elsewhere, including the DOS path list, for a compatible configuration file. If one is found, then the software will start with this file, but save all new settings in a new file on the current path. This provides the means to set up a multiuser system with multiple configuration files: the initial configuration file can be provided from a master path, and individual, personalized configuration files saved to local paths. Also, since Hypersignal can be invoked from a distant path (see note below), a multiuser system can be further enhanced to operate with only one copy of Hypersignal located on the master path.

You can invoke Hypersignal from a remote path. Generally, Hypersignal software searches for support files, its online Help file, and its printer-driver definition file first on its own path, then on the currently logged DOS path, and then in the DOS path list. The online Help and printer-driver definition files are also searched for on the path specified in the User Setup area (see Hypersignal-Macro Series

User Manual section 3.3.3, The User Setup Area, or User Setup Area in Hypersignal, below).

Automatic detection and usage of an 80x87 math coprocessor is performed every time the software executes. For more details on this process, and overriding it if necessary, see Hypersignal-Macro Series Users Manual section 2.3, Using a Math Coprocessor, or Math Coprocessor Usage in Hypersignal, below.

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.1.1 Command-Line Options for Hypersignal

The following command-line options are available when executing Hypersignal-Macro series software packages:

Hypersignal Command-Line Options

Related Topics

Command-Line Options for Hypersignal

Command-Line Examples Of Running Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

EMS Memory Load Hypersignal Command-Line Option

[@j EMS Memory Load]

An '/M' entered immediately after the Hypersignal batch file name will cause Hypersignal to load its overlay file into EMS memory. However, this may limit the resolution of subsequent publication-quality prints--see Hypersignal-Macro Series Users Manual section 4.3.2, Printing Waveform Displays, or section 3.6 below, Printing Menus and Waveform Displays in Hypersignal User Mode.

Hypersignal Command-Line Options

EMS Memory Load

Evaluation Version DSP/Analog Base Address

Initial Macro Program

Initial Waveform Path

Engine Mode Switch

Evaluation Version DSP/Analog Base Address Hypersignal Command-Line Option

[@j Evaluation Version DSP/Analog Base Address]

For evaluation, university program packages, or other special versions of Hypersignal-Macro series software that require specific DSP/analog hardware to be installed in order to operate, a DSP/analog hardware address can be entered in the form '/$HHH', where HHH is a hexadecimal value.

Hypersignal Command-Line Options

EMS Memory Load

Evaluation Version DSP/Analog Base Address

Initial Macro Program

Initial Waveform Path

Engine Mode Switch

Initial Macro Program Hypersignal Command-Line Option

[@j Initial Macro Program]

An initial macro program filename can be entered in the form 'filename.mac'. If filename.mac specifies a valid macro source code file, then the software will immediately execute the macro file upon executing. This provides a method for executing Hypersignal functions remotely, from the operating system or from another

program. Input parameters with which the software will initialize the Macro Manager menu before executing the macro can be specified after the macro filename by preceding them with a '#' character. For example, you could instruct Hypersignal-Macro to run and then immediately compile (if necessary) and execute the "fsconv.mac" file included on distribution diskette #2 with the following command-line statement:

```
HSM fsconv #speech #9 #4 #sp_out  <Enter>
```

The above parameters for fsconv.mac would initialize the input waveform to "speech", the stretch and contract integers to 9 and 4, respectively, and the output waveform to "sp_out". Up to 6 input parameters can be placed in the command line. Note that the macro language file can use the "Exit" or "Abort" commands to automatically leave Hypersignal upon completion of the macro file, relinquishing control if necessary; see Hypersignal-Macro Series Users Manual section 7.10, Macro Commands and Functions, for more information. You could even specify an input parameter that the macro could use to *conditionally* determine whether to exit automatically, in case the macro was also one used frequently from inside Hypersignal, as in the following macro source code example:

```
if #3 = "Exit" then
    Exit   ; save config file and exit
endif

if #3 ="Abort" then
    Abort   ; exit without saving config file
endif
```

In the above example, Hypersignal will terminate depending on the value of input parameter #3 passed in the command line. However, if you needed to execute the macro from inside Hypersignal without exiting, input parameter #3 could entered in the Macro Manager menu as anything but "Exit" or "Abort" to prevent the macro from causing Hypersignal to terminate.

Hypersignal Command-Line Options

EMS Memory Load

Evaluation Version DSP/Analog Base Address

Initial Macro Program

Initial Waveform Path

Engine Mode Switch

Initial Waveform Path Hypersignal Command-Line Option

[@j Initial Waveform Path]

A '/pxxxx' entry in the Hypersignal command-line will set the initial Hypersignal waveform path to 'xxxx'. Normally, the waveform path is set using the User Setup function, under the Utilities menu, during program operation. An example is show below:

```
HSM /pC:\hsmacro\waveform
```

Hypersignal Command-Line Options

EMS Memory Load

Evaluation Version DSP/Analog Base Address

Initial Macro Program

Initial Waveform Path

Engine Mode Switch

Engine Mode Switch Hypersignal Command-Line Option

[@j Engine Mode Switch]

A '/e' entry in the Hypersignal command-line will cause Hypersignal to run in "engine mode", in which case all user-interface graphics and menus, waveform displays, and other screen output is disabled. All functions, displays, and instruments are still active, but input must come from macro language programs or functions, or from the "simulated keyboard" macro control facility. In engine mode, the MetaWindow graphics drivers are not loaded into memory.

Engine mode can be especially useful when invoking Hypersignal from a user-defined C/C++ program. This technique is used by DSPower-Block Diagram software when controlling a Hypersignal

package as a DSP Engine (see User Mode and Engine Mode, and Pipe.386 VxD, in Signalogic DSP Software System Guide section 1.1, Relationship of Signalogic DSP Software Components).

Hypersignal Command-Line Options

EMS Memory Load

Evaluation Version DSP/Analog Base Address

Initial Macro Program

Initial Waveform Path

Engine Mode Switch

3.1.2 Command-Line Examples Of Running Hypersignal

Below is an example of invoking Hypersignal-Macro with both an initial macro program and initial waveform path:

```
HSM example.mac /pc:\waveform  <Enter>
```

In the above example, the Hypersignal-Macro waveform pathname will be set to "c:\waveform", and the macro program "example.mac" will be executed upon Hypersignal-Macro startup.

Below is an example of invoking a university version of Hypersignal-Acoustic with an initial hardware base I/O address of 0x290:

```
HSA /$290  <Enter>
```

Below is an example of invoking Hypersignal-Macro EX from a user-defined Windows C/C++ program:

```
WinExec("c:\\hsmacro\hsmacro.exe /e /pc:\\waveform acq8chan.mac", SW_HIDE);
```

Note that in the above example the associated batch file (which would have been hsm.bat) is not used, because otherwise the MetaWindow graphics drivers would be loaded. Note also that the engine mode parameter is specified, which diables all forms of Hypersignal video, mouse, and physical keyboard interaction.

Related Topics

Command-Line Options for Hypersignal

Command-Line Examples Of Running Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.2 Keyboard and Mouse Interface In Hypersignal User Mode

NOTE: If a Hypersignal-Macro series software package is being operated in engine mode, then the interface below still applies, except that data must be received through the "simulated keyboard" macro facility. See User Mode and Engine Mode, in Signalogic DSP Software System Guide section 1.1, Relationship of Signalogic DSP Software Components.

Below is listed the general function of keyboard keys and mouse buttons during the four basic types of Hypersignal displays: main menu, data-entry menu, waveform display, and online Help display. Only commands that are used frequently in all four major areas are

listed here. For a complete list of data-entry editor, waveform display, and online Help commands, see Hypersignal-Macro Series Users Manual sections 3.4, 4.3, and 3.2, respectively, or sections 3.5, 3.3, and 3.13 (Data-Entry Editor in Hypersignal User Mode, Interactive Waveform Displays in Hypersignal User Mode, and Online Help in Hypersignal User Mode), respectively. Note that for two-button mice, functions listed as responding to the middle button, "two leftmost" buttons, or "two rightmost" buttons will be deactivated. For more detailed information on individual keyboard and mouse functions, please see the appropriate section in this manual pertaining to the display/DSP function you are concerned with.

Table 2General Hypersignal Keyboard Interface in User Mode

	main menu	**data-entry menu**	**waveform display**	**online Help**
'Enter' key	select currently highlighted menu selection	move down one field; advance to processing and/or display function if cursor is on last field	reset waveform display to initial settings	page forwards in online Help text
left,right,up, down arrow keys, mouse motion	highlight menu entree	move editing cursor	move target window or move crosshair cursor, depending on mode	page forwards and backwards inside online Help text
'Home' key, left mouse button	select menu entree	moves cursor down one field (left mouse button); moves cursor to start of field ('Home' key)	zoom in on waveform if in "region" mode, attach crosshair cursor to waveform if in "point" mode	jump to start of Help text
spacebar key, right mouse button	select menu entree	no action (spacebar), moves cursor down one field (right mouse button)	pan forward to next waveform display frame	jump to end of Help text (right mouse button only)
middle mouse button	select menu entree	moves cursor down one field	pan backwards to previous waveform display frame	page forwards in online Help text
'Backspace' key	no action	backup and delete character	pan backwards to previous waveform display frame	page backwards in online Help text

'Esc' key, leftmost two mouse buttons	no action	return to main menu	return to data-entry menu	return to main menu, data-entry menu, or waveform display
'F1' key, rightmost two mouse buttons	display online Help for currently highlighted menu selection	display online Help for current processing/display function	display online Help for current processing/display function	invoke general Help, text
outer two mouse buttons together	no action	no action	zoom-out for waveform display ("zoom undo")	no action
'F3' key	invoke Macro Manager menu	no action	no action	no action
'F4' key	invoke Macro Record menu	no action	no action	no action
'F10' key	invoke DOS shell	no action	no action	no action
'ctrl-Enter' key sequence (or 'ctrl-J' on NEC PC-98xx machines)	no action	advance to processing and/or display function	no action	no action
'End' key	no action	moves cursor to end of field	no action	jump to end of Help text
'Insert' key	no action	put data-entry editor into "insert" mode	insert samples into waveform if in "region" mode for those display functions where editing is allowed	no action
'Delete' key	no action	delete character at current cursor position	delete samples from waveform if in "region" mode for those display functions where editing is allowed	no action
'PgUp' key	no action	initiates "popup directory" display	scale waveform up	page backwards in online Help text
'PgDn' key	no action	shows next page of "popup directory" display	scale waveform down	page forwards in online Help text

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.3 Online Help In Hypersignal User Mode

Online Help may be accessed from anywhere in the Hypersignal program by using the 'F1' key, or the rightmost two buttons on a three-button mouse. From the main menu and inside waveform displays, the '?' and 'H' keys also access online Help. During waveform displays, always use these keys and/or mouse bottoms, even though legends may not always be shown during waveform displays.

Within any Help text display, accessing Help again will begin a general Help text display; the general Help text is always available even if the online Help file ("hsmacro.hlp") should be lost or destroyed.

The number of pages in the Help display will vary between menu selections. Use the 'PgDn', down arrow keys, or move the mouse down to page forward, and the 'PgUp', up arrow keys, or move the mouse up to page backward. The 'End' key (or righthand mouse button) will jump to the end of the displayed Help text. The 'Home' key (or lefthand mouse button) will jump to the start of the displayed Help

text. You may return to the previous menu at any time by pressing the 'Esc' key (or the leftmost two buttons on a three-button mouse).

Hypersignal searches the currently logged DOS path, the path containing the "HSxxxxx.EXE" file (DOS 3.3 and above only), the User Setup path, and the DOS path list for the online Help file. If not found, Hypersignal then searches the current subdirectory and logged drive shown in the User Setup area. If still not found, Hypersignal will report the Help file not found and disable online Help display during the current session until such time as the current subdirectory and logged drive in the user setup area is changed to correctly access the online Help file. General Help is always available, since it is imbedded in the main program file, "HSxxxxx.EXE". If you should accidentally damage or destroy the online Help file, then contact your distributor for a replacement.

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.4 Main Menu in Hypersignal User Mode

After starting the Hypersignal program as outlined in previous sections, the Hypersignal main menu similar to one will be displayed. Once the main menu is displayed, the following keys are active (note that most of these key functions are listed horizontally at the bottom of the main menu screen):

Table 3 Main Menu Keyboard Interface in Hypersignal

'Q'	Quits Hypersignal without saving or updating the user-environment configuration file
'E'	Exits Hypersignal and saves/updates the user-environment configuration file
'U'	Saves/updates the user-environment configuration file without exiting Hypersignal
'F1', '?', 'H', two rightmost buttons on three-button mouse	Begins online Help display for current menu function selected (highlighted selection)
'F3'	Invokes the Macro Manager menu, in which a macro source file can be specified for compilation and/or execution (see Hypersignal-Macro Series Users Manual section 3.10, Invoking Macros, or section 3.12, Invoking Macro Programs in Hypersignal User Mode)
'F4'	Invokes the Macro Record menu, in which an empty macro source file can be specified to which to record manual function and display selections (and display commands) for later "playback" as a macro (see Hypersignal-Macro Series Users Manual section 4.10.2, Using the "Record" Mode to Create Macros, or Recording Macros in Hypersignal User Mode in section 3.22, Creating Macro Programs in Hypersignal User Mode).
'F10'	This is the DOS "Hot-Key"--it activates a temporary DOS shell in which standard DOS commands can be entered and executed (type 'Exit' to return to Hypersignal)
Arrow keys or mouse motion	Change current (highlighted) menu selection in respective direction (up, down, left, or right)
'Enter', spacebar, any mouse button	Selects currently highlighted menu function

The main menu can be divided into three basic areas. The largest, occupying the lower 2/3 of the screen, is the menu selection area. In this area, the arrow keys or mouse can be used to change the current menu highlight, and the 'Enter' (carriage return) key or any mouse button can be used to select a particular function.

At the upper right of the screen is the User Setup area. This area may be accessed by the User Setup menu selection, under the Utilities column heading, at the far right of menu selection area. In this area, the current logged drive and subdirectory, currently selected time and frequency domain filenames, and several global program parameters may be modified. See section 3.4.3, User Setup Area in Hypersignal, for more detailed information on this part of the Hypersignal main menu.

At the upper left of the screen is the System Status area. This area cannot be accessed by the user. Status parameters include the current time and date, running Hypersignal session time, and current menu function selected. The current menu function selected will display "MAIN MENU" until menu selection, after which it will display the appropriate menu label. The System Status area is also used by the data-entry editor as a "Waveform Summary" display area (see Hypersignal-Macro Series Users Manual section 3.4.1, Waveform Summary Display, or section 3.5, Waveform Summary Display in Hypersignal) when waveforms have been loaded, and for a "Popup Waveform Directory" display area when the program cannot locate a specified waveform filename (see Hypersignal-Macro Series Users Manual section 3.4.2, Popup Directory Display, or section 3.5.2, Popup Directory Display in Hypersignal).

See Hypersignal-Macro Series Users Manual section 3.3.4, The System Status Area, or section 3.4.4, System Status Area in Hypersignal, for detailed information on the System Status area of the main menu.

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.4.1 Menu Selection in Hypersignal User Mode

When being operated in user mode, all Hypersignal functions can be highlighted in the main menu using the mouse motion or arrow keys and then selected with the 'Enter' (carriage return) key or any mouse button. There are three categories of Hypersignal functions, which are divided into columns in the main menu display: Time Domain, Frequency Domain, and Utilities. Appendix B, Hypersignal Environment Flow Diagram, shows a graphical representation of all menu selections and waveform displays, and what type of waveform data they use as input and create as output, if any. Pressing the 'Enter' key, space bar, or any mouse button will invoke the currently highlighted menu selection.

Once inside the "data-entry menu" for any menu selection (see Hypersignal-Macro Series Users Manual section 3.4, Using the Hypersignal Data-Entry Editor, or section 3.5, Data-Entry Editor in Hypersignal User Mode), pressing the 'Enter' key (or any mouse button) with the cursor on the last data-entry field, or pressing the 'ctrl-Enter' key sequence at any time advances to function processing or graphical display, as the case may be.

At any time, you may access online Help for the currently highlighted menu selection. Use the '?', or 'F1' keys to display of relevant Help information. *The 'Esc' (escape) key always returns to the main menu.*

Related Topics

Menu Selection in Hypersignal User Mode

Quit/Exit in Hypersignal User Mode

User Setup Area in Hypersignal

System Status Area in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.4.2 Quit/Exit in Hypersignal User Mode

In user mode, you can only leave Hypersignal from the main menu. You can do this two ways: Quit ('Q' key), or Exit ('E' key). If you quit, Hypersignal stops everything on the spot, the current Hypersignal user-environment is not saved, and the operating system prompt returns immediately. If you exit, Hypersignal saves the current user environment, including graphics and acquisition hardware driver selections, all current filename selections, display options, menu selections, and so forth, in the user-environment configuration file ("hsmacro.cnf" or "hsacous.cnf") and then returns to the operating system prompt.

When you leave Hypersignal, the current DOS path will be the same as when you started Hypersignal, unless you shelled out to DOS or to

an external program during Hypersignal execution and changed the logged path with the RESTORE DOS PATH field in the External Program Configuration menu disabled (see Hypersignal-Macro Series Users Manual section 3.6, Invoking External Programs and the DOS "Hot-Key", or section 3.7, Running External Programs in Hypersignal).

Related Topics

Menu Selection in Hypersignal User Mode

Quit/Exit in Hypersignal User Mode

User Setup Area in Hypersignal

System Status Area in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.4.3 User Setup Area in Hypersignal

In user mode, when menus are displayed (screens other than graphical displays), the upper right of the screen will reflect the current User

Setup. This area may be accessed by the User Setup menu selection, under the Utilities column heading (see Hypersignal-Macro Series Users Manual section 2.5.1, Initializing the User Setup Area). In this area, such parameters as the current logged drive and subdirectory, currently selected time and frequency domain waveform filenames, dual display autoscaling and global program sound enable/disable may be modified.

In engine mode, some types of data normally displayed in the User Setup area are sent via the Pipe.386 VxD to the external controlling application, which can choose to process or ignore this data.

The logged drive and subdirectory parameters *apply to all Hypersignal waveform files.* The current TIME FILENAME and FREQ FILENAME can be used to initialize the functions under the Time Domain and Frequency Domain column headings, respectively. In practice, setting these values via the User Setup menu item is of little worth, because all filenames can be set in the individual functions anyway, and the program does such a good job of automatically tracking waveform names from one function to another.

All user setup parameters are initialized from the user-environment configuration file, including the current drive and subdirectory. If a configuration file cannot be found, then the User Setup parameters will be initialized to a default state (drive and subdirectory will be initialized to their DOS values at the time of program start).

Should subdirectory information need be entered that is longer than the subdirectory field in the system setup area, additional subdirectory information may be entered following the drive identifier (drive plus colon) in the drive field. When accessing files, Hypersignal forms the search path by concatenating the drive and subdirectory fields, *exactly as they are shown onscreen in the User Setup area.* If using both fields for subdirectory information, be careful that consecutive or extra forward slashes do not occur.

If you need to specify a path longer than the DRIVE and SUBDIRECTORY fields combined, then set this path directly in the user-environment configuration file. Even though the path will be truncated for display purposes on the main menu, its internal length will remain intact. In such a case, do not edit the path directly in the program. If you do, its internal value will be truncated also.

Additional Information

Related Topics

Menu Selection in Hypersignal User Mode

Quit/Exit in Hypersignal User Mode

User Setup Area in Hypersignal

System Status Area in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Autoscaling in Hypersignal

The DUAL AUTOSCALE field in the User Setup area is important enough to warrant further discussion in this section. This field disables or enables automatic scaling by the program during dual waveform displays. When enabled (an entry of 'ON'), the program automatically scales the smaller of two waveforms in a dual display to so that its maximum absolute amplitude matches the larger. When disabled (an entry of 'OFF'), no scaling is performed, allowing waveform amplitudes to be compared relatively. The default value for this field is 'FILE', in which case the program automatically enables

autoscaling for dual displays where one or both waveforms have the "AUTOSCALE" bit in their waveform headers enabled, and disables autoscaling in all other cases. Hypersignal does not currently set the AUTOSCALE bit for any reason, but this bit can easily be set by user-defined external programs or macro language processing. See Hypersignal-Macro Series Users Manual chapter 5, Hypersignal Waveform File Format, or Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format, for more information about the AUTOSCALE bit and waveform headers.

Related Topics

Menu Selection in Hypersignal User Mode

Quit/Exit in Hypersignal User Mode

User Setup Area in Hypersignal

System Status Area in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.4.4 System Status Area in Hypersignal

In user mode, when menus or data-entry screens are displayed (screens other than graphical displays), the upper left of the screen shows the "System Status". This area cannot be accessed by the user. System Status area parameters include the time and date, running Hypersignal session time, and current function selected.

In engine mode, some types of data normally displayed in the System Status area are sent via the Pipe.386 VxD to the external controlling application, which can choose to process or ignore this data.

The current function selected will display "MAIN MENU" while the main menu is displayed, and indicate the current function after selection from the main menu.

The time and date are initialized at program start, and updated with normal program use thereafter.

The running session time indicates the length of time Hypersignal has been in use continuously. It is also updated with normal program use. If no clock is active in the host computer, then the time and date will be correct only if they were set manually at the time of the DOS prompt during computer power-on sequence.

The System Status area is also used to display various other information during the course of normal program operation:

Additional Information

Related Topics

Menu Selection in Hypersignal User Mode

Quit/Exit in Hypersignal User Mode

User Setup Area in Hypersignal

System Status Area in Hypersignal

Error Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Status Message Display Area in Hypersignal

Various Hypersignal status message and non-critical error conditions may be reported in the System Status area, located at the upper left of the Hypersignal main menu, from time to time. See Hypersignal-Macro Series Users Manual section 3.3.4.1, Status Message Display, or Status Message Display in Hypersignal, below, for more information.

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Error Message Display Area in Hypersignal

Various DOS and Hypersignal critical error conditions may be reported in the System Status area, located at the upper left of the Hypersignal main menu, from time to time. See Hypersignal-Macro Series Users Manual section 3.3.4.2, Critical Error Message Display, or Error Message Display in Hypersignal, below, for more information.

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Waveform Summary Display Area in Hypersignal

Upon successful load of a waveform for subsequent display or processing, a summary of the contents of waveform file headers is displayed in the System Status Area, located at the upper left of the Hypersignal main menu. See section Hypersignal-Macro Series Users Manual section 3.4.1, Waveform Summary Display, or Waveform Summary Display in Hypersignal, below, for details.

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

When a specified waveform filename can't be located, or upon user request, the System Status area (located at upper left of the Hypersignal main menu) is used to show popup directory information based on the current processing/display function being executed. A waveform filename search strategy is employed to allow the user to search through likely categories of waveforms depending on what the required waveform file types are in the current function. See Hypersignal-Macro Series Users Manual section 3.4.2, Popup Directory Display, or Popup Directory Display in Hypersignal, below, for a detailed description.

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Status Message Display in Hypersignal

In user mode, non-critical Hypersignal-detected error or status conditions, such as a user-defined program not found or lack of disk space to perform an "Exit" function (and save the user-environment configuration file) are displayed in the System Status area. Also, the macro language facility uses this area extensively, displaying all compilation and execution status or error messages in the System Status area.

In engine mode, status and non-critical error message display can also appear as a status box in the external controlling application's user-interface, if the external application accepts this data being sent via the Pipe.386 VxD. DSPower-Block Diagram software has an option to enable a status and error message box when a Hypersignal block is being executed..

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Error Message Display in Hypersignal

Critical errors, including DOS-related error conditions such as write-protected diskettes, drive not ready, and media error (bad sector, seek error, etc.) are displayed in the System Status area at the upper left of the main menu. All DOS error messages that would normally overwrite the current display (including the infamous "Abort, Retry, or Ignore?" messages) are intercepted by Hypersignal, translated, and displayed (if necessary) in the System Status area along with the disk affected, if any.

In engine mode, critical error message display can also appear as a status box in the external controlling application's user-interface, if the external application accepts this data being sent via the Pipe.386 VxD. DSPower-Block Diagram software has an option to enable a status and error message display box when a Hypersignal block is being executed..

Related Topics

Status Message Display Area in Hypersignal

Error Message Display Area in Hypersignal

Waveform Summary Display Area in Hypersignal

Popup Waveform Directory Display Area in Hypersignal

Status Message Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.5 Data-Entry Editor in Hypersignal User Mode

NOTE: The Hypersignal data-entry editor is intended for user mode operation. However, interactive commands can be sent to the editor from macro programs, and from an external controlling application using the Pipe.386 VxD.

The Hypersignal data-entry editor is used to allow convenient entry and modification of parameters needed to execute Hypersignal processing and display functions.

Modifiable screen data for all data-entry menus are arranged as a column of "fields". A field is a specific place on the screen where data may be entered or changed. Each field consists of one or more characters. Characters may be any valid keyboard character except for the spacebar, unless otherwise noted. The current character position in the current field being edited is indicated by a blinking cursor. A large blinking cursor is used when in insert mode (enabled by the 'Insert' key; see below), and the standard DOS cursor is used when in Overwrite mode. A field is "entered" by the 'Enter' (carriage return) key or a mouse button, after which the cursor advances to the next field automatically. The arrow keys or mouse motion can be used to move the cursor from character to character and from field to field.

There are two ways to advance to actual function processing or graphical display:

1. entering the last field (pressing the 'Enter' key or any mouse button when the cursor is on the last field in the menu), or
2. pressing the <ctrl-Enter> key sequence (use <ctrl-J> key sequence on NEC PC-98xx machines). Doing either of these will cause function processing or display to begin, as appropriate.

All fields in a data-entry menu except the last field may be revised as many times as necessary by repositioning the cursor to that field and entering the field.

At any time, you may access online Help for the currently invoked processing or display function. Use the 'F1' key to begin display of relevant Help information.

To return to the main menu from any data-entry menu, use the 'Esc' (escape) key.

The data-entry editor has two basic modes, controlled through the EDITOR UNDO field in the User Setup menu selection. The default value for this field is 'OFF', which will cause the up and down arrows or vertical mouse motion to keep any changes made in the previous field. An 'ON' entry for the EDITOR UNDO field will cause the up and down arrow keys and vertical mouse motion to "undo" any changes on the previous field--allowing only the 'Enter' key or mouse button to finalize a field.

When a filename field is entered, data beyond the cursor position is cleared. This does not occur for fields which contain "subfields", or two or more separate entries separated by commas, since it may only be one subfield of the field that needed changing. This also does not occur in almost all cases if the cursor is at the very beginning of a field, regardless of the type of field.

After entering the Insert mode (see 'Insert' key, below), any type of entry that causes a field change (up and down arrow keys, mouse motion, 'Enter' key) automatically disables the Insert mode.

Following are the active keyboard controls when editing Hypersignal function data entry displays:

Table 4Data-Entry Editor Interface in Hypersignal

arrow keys or mouse motion	All arrow keys and mouse movement are active in the editor, allowing you to move within and between fields without changing data. Arrow keys will "wrap-around" when at the first and last fields up and down, or the first and last characters left and right. Mouse motion never causes a wrap-around, because it is so easy to overmove the mouse.
'Enter' key (carriage return) or any mouse button	Used to "enter" a field. Whatever data presently contained in a field will be finalized when the 'Enter' key or a mouse button is pressed. A field may be entered regardless of the current cursor position in the field. After entering the last field in a data-entry menu, function processing or graphical display, as appropriate, will begin.
<Ctrl-Enter> key sequence (or <Ctrl-J> for NEC PC-98xx machines)	"Enters" the current field and causes function processing or graphical display to begin.
'Delete' key	Deletes the character in the current cursor position without changing cursor position. All characters to the right of the cursor are moved to the left one space.
'Insert' key	Causes the data-entry editor to enter Insert mode, in which new characters do not overwrite characters already entered, but instead are inserted at the current cursor location. Insert mode is indicated

	onscreen by a large blinking cursor. Pressing the 'Insert' key again returns to Overwrite mode, and also returns the cursor to its original, standard DOS size.
'Backspace' key	Deletes the character immediately to the left of the current cursor position, and then moves to the left one space. All characters to the right of the cursor are moved to the left one space.
'Esc' key (or leftmost two buttons on three-button mouse)	Returns to the main menu. Any fields already entered remain so.
'PgUp' key	Begins popup directory display for the current function, if not already started because the program couldn't locate a specified waveform filename. The waveform filename and extension used depends on the current function and/or menu selection. Consecutive use of the 'PgUp' key causes the popup directory display to first return to the first page of the current directory display (if not on the first page), and then starts changing the current filename and extension search strategy in use. See Hypersignal-Macro Series Users Manual section 3.4.2, Popup Directory Display, or Popup Directory Display in Hypersignal, below, for details.
'PgDn' key	Used to display the next page of popup directory information. Popup directory information is displayed during functions requiring input waveform filename entry when the input filename cannot be found, or in response to the 'PgUp' key, above. See Hypersignal-Macro Series Users Manual section 3.4.2, Popup Directory Display, or Popup Directory Display in Hypersignal, below, for details.
'Home' key	Moves cursor to beginning of current field.
'End' key	Moves cursor to end of current field.
'F1' key (or rightmost two buttons on three-button mouse)	Causes online Help text for the currently invoked processing or display function to be displayed. The 'Esc' (escape) key will return to the data-entry menu.

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal
Configuration Files in Hypersignal
Creating Waveform Files in Hypersignal
Finding Waveforms in Hypersignal User Mode
Running Macro Programs in Hypersignal

3.5.1 Waveform Summary Display in Hypersignal

In user mode, waveform summaries are displayed in the System Status area of the Hypersignal main menu (upper left) after successful loading of waveform file(s) for display or processing. A waveform summary displays parameters and attributes from the waveform file header (see Hypersignal-Macro Series Users Manual chapter 5, Hypersignal Waveform File Format, or Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format), including the number of samples in the waveform, type of data (arbitrary time waveform, LPC autocorrelated, filter construction output, etc.), whether or not the time domain file is real or complex, number of channels, maximum amplitude, sampling frequency, FFT order, and time domain analysis framesize.

In engine mode, waveform summary display can also appear as a status box in the external controlling application's user-interface, if the external application accepts this data being sent via the Pipe.386 VxD. DSPower-Block Diagram software has an option to enable a waveform summary display box when a Hypersignal block is being executed..

To redisplay a waveform summary that has been overwritten by popup directory display information or error messages, you can reload the waveform by repositioning the cursor at the beginning of the waveform filename field and pressing the 'Enter' (carriage return) key.

In the case of dual-waveform display functions, the waveform summary always applies to FILENAME1.

Below is an example of a waveform display summary:

```
Number of samples:  1015672
```

```
Type/complex/numchn:  magH[n]/real/1
    Max |amplitude|:  19103.0
 Analysis framesize:  4096
          FFT order:  12
 Sampling frequency:  44100Hz
```

Especially note the "Type/complex/numchn" descriptor, which, in this example, indicates a non-complex, single-channel, filter (transfer function, or "H[n]") magnitude (frequency domain) waveform file. The "type" of a waveform actually consists of two parts: the type of data, and its original source. Currently, the type of waveform data can be "tim" for time domain data, "mag" for frequency domain magnitude data, "phz" for frequency domain phase data, or "pwr" for frequency domain power spectra data. The source of data can be "" (null) for arbitrary time domain data (e.g. A/D input), "H[n]" for filter construction or other transfer function output, or "LPC" for LPC Autocorrelation output. The "complex" descriptor can be "real" for data that was non-complex in its original time domain form, or "cplx" for data that was complex. Complex data exists when at least one imaginary component in a time waveform file is non-zero. See Hypersignal-Macro Series Users Manual chapter 5, Hypersignal Waveform File Format, for a description of the complex attribute of waveform file headers and the format of both complex and real data.

Below is a second example of a waveform display summary:

```
  Number of samples:  10000
Type/complex/numchn:  tim/cplx/2
    Max |amplitude|:  31596.25
 Analysis framesize:  144
          FFT order:  9
 Sampling frequency:  1568100Hz
```

The above example is for a complex, two-channel, arbitrary time domain waveform file.

NOTE: With version 3.10 or later of Hypersignal-Macro, the "Max \|amplitude" value that is displayed can be a floating-point value. For a full explanation of waveform amplitude values and waveform header exponents, see Hypersignal-Macro Series Users Manual chapter 5, Hypersignal Waveform File Format, or Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format.

Related Topics

Waveform Summary Display in Hypersignal

Popup Directory Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.5.2 Popup Directory Display in Hypersignal

In user mode, popup directory display appears during data-entry editor menus as an automatic window display in the System Status area (upper left of main menu) when a specified filename cannot be found.

Also, you can manually invoke popup directory display from inside any data-entry menu by using the 'PgUp' key.

In engine mode, popup directory display can also appear as a status box in the external controlling application's user-interface, if the external application accepts this data being sent via the Pipe.386 VxD. DSPower-Block Diagram software has an option to enable a popup waveform directory box when a Hypersignal block is being executed..

Popup directory display includes waveform filename and extension, length, and date of creation. In user mode, the search strategy for different waveform extensions and/or more specific waveform filename may be changed via consecutive use of the 'PgUp' key (see Hypersignal-Macro Series Users Manual section 3.4.2.1, Popup Directory Waveform File Search Strategy, or Popup Directory Waveform File Search Strategy in Hypersignal User Mode, below).

During time domain, frequency domain, and some utility functions requiring input waveform files, if a waveform filename is not found after being entered by the user, then candidate filenames having appropriate filename extensions will "popup" in the System Status area. The initial filename extension used is based on the current function. For example, when performing an FFT function, an input filename not found will prompt display of those filenames on the current path with ".TIM" extensions, since the FFT is a time domain function. Other time domain extensions include ".FFD" and ".IFD" for Filter Construction filenames, ".IIR" for Recursive Filtering input filter coefficient files, and ".EQU" for Difference Equation save files. Continued use of the PgUp key will change the search path to "alternate" filename extensions, or a "filename.*" search (see Hypersignal-Macro Series Users Manual section 3.4.2.1, Popup Directory Waveform File Search Strategy, or Popup Directory Waveform File Search Strategy in Hypersignal User Mode, below).

During frequency domain functions requiring filename entry initial filename extensions used for popup directory display can be ".FRQ" (magnitude), ".PHZ" (phase), ".IMA" (imaginary), ".REA" (real), or ".PWR" (power spectra).

For utilities selections the value for the extension varies, depending on menu selection. For External Program Configuration, the extensions are ".COM", ".EXE", and ".BAT". For ASCII Export, the extension is ".TXT". For File Acquisition and ASCII import, the extension used is the extension currently entered as part of the input filename field of

the data-entry menu, or the last valid one set for time domain or frequency domain functions. This is also true for all other menu selections that do not require filename entry: they use the last valid extension set by selections that do require filename entry.

Additional Information

Related Topics

Waveform Summary Display in Hypersignal

Popup Directory Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Popup Directory Waveform File Search Strategy in Hypersignal User Mode

When Hypersignal is being operated in user mode, consecutive use of the 'PgUp' key will change the search strategy for the current popup directory display. After initial display, in which the entered filename has been replaced by a "∗" and an appropriate filename extension added, a second 'PgUp' key will cause the currently entered waveform filename and extension to be used in the directory search. If no extension is entered, a ".∗" extension will be added to the entered filename. Thus, the second 'PgUp' key effectively shows all occurrences of the filename you've entered, regardless of extension. A third 'PgUp' key will use the currently entered filename along with an "alternate extension"; for example, filter design functions have a primary extension of ".IFD" or ".FFD" because of the specification files they use, but they also have an alternate extension of ".TIM", because they are time domain functions. As another example, Difference Equations have a ".EQU" primary extension and a ".TIM" alternate extension. If no alternate extension applies to the function selected, a ".∗" extension is substituted. Further 'PgUp' keys cause the process to start over.

You may also temporarily enter "∗" or "?" wildcard characters after or inside the filename to further direct a waveform search; for example a 'test∗' entry would include all filenames starting with "test", and having the appropriate extension. As another example, an entry of 'x?test' would include all filenames starting with "x", ending with "test", and having any other character in between.

NOTE: To re-initialize popup directory display after you have changed the filename in the data-entry menu, or added a wildcard character ('*', '?'), >you must reposition the cursor at the beginning of the waveform filename field and 'Enter' the field, then press the 'PgUp' key.

Related Topics

Waveform Summary Display in Hypersignal

Popup Directory Display in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.6 Printing Menus and Waveform Displays in Hypersignal User Mode

To print Hypersignal menu displays in user mode, you should use the standard DOS <shift-Print Scrn> key sequence; there is no built-in Hypersignal function for printing menu displays.

To print waveform displays, both to printers and disk files, you should use the built-in Hypersignal function that can perform both "screen dumps" and "publication-quality" prints. A screen dump is defined as simply transferring the current contents of video RAM directly to the printer, without any increase in resolution. Of course, for printers with resolution greater than about 90 dots per inch, this will not fully utilize the capability of the printer. A publication-quality print is defined as regenerating the current screen display in EMS memory, at much higher resolution, and then transferring this image to the printer.

The built-in waveform print function is invoked by the 'F2' key inside all waveform displays. See Hypersignal-Macro Series Users Manual section 4.3.2, Printing Waveform Displays, or Printing Menus and Waveform Displays in Hypersignal User Mode, below, for full details on using the built-in print function.

NOTE: If you need to add a printer to the printer-driver definition table (pdt), or modify an existing entry, then you can invoke the pdt editor. The file "BDE.EXE" has been provided for this purpose; by typing 'BDE' at the DOS command line (outside of Hypersignal), you will bring up a listing of all current printers. A special-purpose editing mode is available that allows you to set various printer specifications and parameters, and also to set special "escape sequence" commands for the printer. Follow the instructions in the online Help for when modifying or adding printer entries. If you need further assistance, please contact your distributor.

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.7 Running External Programs in Hypersignal

When operating in user mode, external programs can be executed directly from the Hypersignal main menu. External programs can also be executed from Hypersignal macro programs, when Hypersignal is operating in engine mode.

To enhance the main menu capability, "User-Defined" menu labels are available on the main menu (two each under the Time Domain, Frequency Domain, and Utilities columns). For example, you could set up a user-defined utility menu label to point to a text-editor, and time domain and frequency domain menu labels to point to your own DSP processing programs.

In user mode, select the Ext Program Config menu item to set up your external program filenames and desired Hypersignal menu labels. For example, a typical External Program Configuration menu might look like this:

```
TIME FILE,MENU LABEL1:  sinegen.exe,sinegen
TIME FILE,MENU LABEL2:  prog1.com,menu_lab_1
FREQ FILE,MENU LABEL1:  prog2.exe,menu_lab_2
FREQ FILE,MENU LABEL2:  prog3.xxx,menu_lab_3
UTIL FILE,MENU LABEL1:  edit.com,text-editor
UTIL FILE,MENU LABEL2:  prog5.yyy,menu_lab_5
               DRIVE:  C:
        SUBDIRECTORY:  HSIGNAL
```

where "sinegen.exe" is an example external program provided on the distribution diskettes (intended as an example of how to access the Hypersignal user-environment configuration file), "edit.com" is a prototypical text editor, and "progN.ext" are prototypical user-defined programs.

In user mode, it is quite possible there will not be enough memory available to run an external program from Hypersignal. In this case,

see if you reduce the number of memory-resident utilities loaded or relocate them to high memory. Also, you may investigate whether you can load the "met_shel.exe" graphics driver into "high" memory, above the 640 kByte conventional memory. Whether this can be done or not is highly system-dependent. See Hypersignal-Macro Series Users Manual section 2.4.3, Installing the Metagraphics Driver Above Conventional Memory, for more information.

In engine mode, it is unlikely that external programs will encounter memory problems. First, the met_shel.exe graphics driver is not loaded in engine mode; second, external programs can actually be executed by the external controlling application, after being passed an external program pathname and command-line parameters through the Pipe.386 VxD. This is the method used by macro programs and functions auto-generated by DSPower-Block Diagram for Hypersignal when being used as a DSP Engine. Also, macro programs can ask the controlling application to execute external programs either synchronously, or aysnchronously.

NOTE: In user mode, you should not install memory-resident drivers from Hypersignal. Why? Because of the graphics driver ("met_shel.exe"), which is installed as memory-resident just before Hypersignal runs (done automatically by the HSx.BAT batch file), and is removed from memory just after Hypersignal runs. In order for "met_shel.exe" to be removed, it must be the last memory-resident driver installed. If not, because another driver has been installed after it, "met_shel.exe" cannot be removed and will continue to occupy system memory even after Hypersignal has finished executing.

See Hypersignal-Macro Series Users Manual section 2.5.3, Initializing the External Program Configuration Menu, for more information on setting up external programs and defining main menu labels.

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.7.1 DOS Shell in Hypersignal User Mode

The F10 key has been installed in the Hypersignal main menu as a DOS "Hot-Key", which allows you to jump to a DOS shell at any time from the main menu, perform DOS operations, and "exit" quickly back to Hypersignal.

A DOS shell is invoked with the same technique used for other external programs, with the external program in this case being a copy of the standard DOS "COMMAND.COM" file.

NOTE: Hypersignal updates the user-environment configuration file before executing an external program (including DOS shell) and reads the configuration file back again after the external program finishes executing. In this way, a user-created external program can access and modify the configuration file, causing changes in the Hypersignal environment upon return. In order to guarantee that the configuration file can be read after the external program (or DOS shell) returns, Hypersignal saves the current DOS path (current logged drive and/or subdirectory) before yielding control, and restores the saved value afterwards. If you wish to override the automatic restoration, because external or macro processing needs to change DOS paths, you can set the RESTORE DOS PATH field in the External Program Configuration menu to 'N'. However, keep in mind that if you disable automatic restoration, and then change the current logged drive and/or subdirectory while in an external

program or DOS shell, Hypersignal will read (or attempt to read) a new configuration file, if any, after the external program finishes.

You should not install memory-resident drivers from a DOS shell invoked during Hypersignal operation. Why? Because of the graphics driver ("met_shel.exe"), which is installed as memory-resident just before Hypersignal runs (done automatically by the HSx.BAT batch file), and is removed from memory just after Hypersignal runs. In order for "met_shel.exe" to be removed, it must be the last memory-resident driver installed. If not, because another driver has been installed after it, "met_shel.exe" cannot be removed and will continue to occupy system memory even after Hypersignal has finished executing.

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.8 Configuration Files in Hypersignal

The "user-environment configuration file" is an ASCII text file that contains the complete state of all user-controlled parameters in Hypersignal. This file is intended to be saved between Hypersignal

sessions so that frequent use of the software is as convenient as possible, and no time is spent rethinking set-up or initialization parameters. The configuration file is saved on disk under the name "hsmacro.cnf" for Hypersignal-Macro NRT, Hypersignal-Macro, and Hypersignal-Macro EX versions of Hypersignal software, and as "hsacous.cnf" for Hypersignal-Acoustic software.

The user-environment configuration file includes the current graphics and mouse hardware drivers, current selected acquisition/DSP hardware (real-time software only), current User Setup area, all current menu selections, all current user-modifiable data (filenames, analysis parameters, display options, etc.), current editing cursor position, and so forth. Every user-modifiable parameter in Hypersignal is saved in the configuration file.

The user-environment configuration file can be saved from Hypersignal in three ways:

1) By "exiting" from the main menu ('E' key). Exiting the software saves the configuration file and stops Hypersignal execution.

2) By "updating" from the main menu ('U' key). Updating saves the configuration file but Hypersignal continues to execute.

3) By executing an external program or DOS shell. The configuration file is saved automatically by the program in anticipation of access by the external program.

NOTE: If you "quit" from the Hypersignal main menu, the user-environment configuration file is not saved.

When Hypersignal next executes, or control is returned to Hypersignal, the user-environment is initialized to a state defined by the configuration file contents. See Hypersignal-Macro Series Users Manual appendix A, User-Environment Configuration File Format, and the "config.doc" file included on the distribution diskettes, for a listing of configuration file contents.

Upon executing Hypersignal software for the first time, a message of the form "cannot find configuration file...Initializing new configuration" should be displayed. This message only appears when executing the software for the first time, because normally the configuration file will be present on disk as a result of performing an "exit" function after a previous Hypersignal session. However, when running Hypersignal for the first time, no configuration file will be present--forcing you to specify graphics and mouse driver selections,

since these cannot be determined automatically with 100% accuracy by the software. Please see Hypersignal-Macro Series Users Manual section 2.4, Selecting Graphics and Mouse Drivers, or Graphics and Mouse Driver Selection in Hypersignal User Mode, above, for detailed information on choosing driver selections.

NOTE: Hypersignal checks for a "compatibility identifier" in the configuration save file before reading it. If you have received an updated version of software, there is a good chance your old configuration file won't be "compatible" (due to parameters being changed or added at the end of the file), and the program will display a message of the form "...configuration file not compatible...initializing new configuration..." upon first executing. We apologize for any inconvenience caused by having to reset graphics, mouse, system configuration, and other options.

Below are some notes of interest about accessing the user-environment configuration file:

The example external programs on the distribution diskettes all "include" the "config.doc" file as part of their source code. The "config.doc" file contains an example procedure that searches for the configuration file, opens the file, reads in all parameters, changes a few parameters (by way of example), writes all parameters back to the file, then closes the file.

The current DOS path (drive and subdirectory) is the first place where Hypersignal expects to find the configuration file. Moreover, this is *always* the place where Hypersignal saves its configuration file. If Hypersignal cannot locate a configuration file on the current DOS path, it then searches the path containing the executable file ("HSxxxxx.EXE") and the DOS path list. If a compatible configuration file is found, then the software will start with this file, but save all new settings in a new file on the current path. Note that this provides the means to set up a multiuser system with multiple configuration files: the initial configuration file can be provided from a master path, and individual, personalized configuration files can be saved to local paths.

Because the current DOS path is used as the default location for the configuration file, this value is not saved inside the configuration file itself. Please do not confuse the current DOS path with the User Setup path (DRIVE and SUBDIRECTORY fields at upper right of main menu). The User Setup path is used to locate all Hypersignal

waveforms, and is, of course, saved inside the configuration file. Thus, changing the User Setup path (or the External Program Configuration path or the Macro Manager path or any other path specifiable inside Hypersignal) has no effect on the location of the configuration file.

Hypersignal updates the user-environment configuration file before executing an external program (including DOS shell) and reads the configuration file back again after the external program finishes executing. In this way, a user-created external program can access and modify the configuration file, causing changes in the Hypersignal environment upon return. In order to guarantee that the configuration file can be read after the external program (or DOS shell) returns, Hypersignal saves the current DOS path (current logged drive and/or subdirectory) before yielding control, and restores the saved value afterwards. If you wish to override the automatic restoration, because external or macro processing needs to change DOS paths, you can set the RESTORE DOS PATH field in the External Program Configuration menu to 'N'. However, keep in mind that if you disable automatic restoration, and then change the current logged drive and/or subdirectory while in an external program or DOS shell, Hypersignal will read (or attempt to read) a new configuration file, if any, after the external program finishes.

For real-time versions of the software, it may be necessary to access the configuration file to change the default memory and/or I/O base address for some types of DSP/Acquisition hardware. Use a text-editor to look at the "config.doc" file (on distribution diskette #2) and find out which parameter in the configuration file to change. Also for real-time versions of the software, there exist a few other parameters affecting DSP/Acquisition board operation that cannot be controlled via data-entry menus, and may need to be accessed in the configuration file.

NOTE: Examples of typical DSP/analog hardware values found in Hypersignal configuration files include the "AIC control word" sent down to boards containing the TLC32044 AIC analog I/O chip at run-time, the "IOC register setting" sent down to DSP32C-based boards at run-time, and codec control words. If you need to change aspects of analog converter, codec, or other analog I/O-related items which can't be controlled from Hypersignal data-entry menus, you should check the configuration file. A value may be available which will let you customize analog I/O operation as needed.

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.9 Creating Waveform Files in Hypersignal

From either user mode or engine mode, there are several ways to create waveform files in Hypersignal:

1) Acquire an existing waveform file in some other format using the File Acquisition function (see Hypersignal-Macro Series Users Manual section 4.1.1, Acquiring Waveforms From Disk Files, or Importing Waveform Files in Hypersignal).

2) Acquire data continuously to disk, in real-time, from a supported DSP/Analog hardware type (see Hypersignal-Macro Series Users Manual section 4.1.2, Acquiring Waveforms From DSP/Acquisition Hardware, or Acquiring Waveform Files From DSP/Analog Hardware in Hypersignal).

3) Use the Difference Equations function to generate a waveform based on input from unit-step, delta, trig, noise, and other functions, combined with recursive input, or "feedback" (see Hypersignal-Macro Series Users Manual section 4.6.2, Function Generation with

Difference Equations, or Signal Synthesis with Difference Equations in Hypersignal).

4) Run an external program that, after performing whatever processing for which it was intended, writes output directly to a waveform file (see Signalogic DSP Software Reference Guide chapter 4, Waveform File Formats).

5) Capture and store to file a display trace from the Hypersignal Waveform Display/Edit function or Digital Oscilloscope or Spectrum Analyzer instrumentation functions (see section Hypersignal-Macro Series Users Manual section 4.7.1, Using Instrumentation Displays).

6) Execute a Hypersignal function, such as Filter Construction, that creates a waveform file as output resulting from its normal operation and processing.

7) Run the tim2wav or wav2tim file conversion macro programs.

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.9.1 Creating Complex Waveform Files in Hypersignal

Methods to create complex waveform files in Hypersignal include the following:

1) Acquire an existing complex waveform file in some other format using the File Acquisition function (see Hypersignal-Macro Series Users Manual section 4.1.1, Acquiring Waveforms From Disk Files, or Importing Waveform Files in Hypersignal).

2) Use the "j" operator in the Difference Equations function to generate a complex waveform based on input from unit-step, delta, trig, noise, and other functions, combined with recursive input, or "feedback" (see section 4.6.2, Function Generation with Difference Equations, or Signal Synthesis with Difference Equations in Hypersignal).

3) Run an external program that, after performing whatever processing for which it was intended, writes complex output directly to a waveform file (see Signalogic DSP Software Reference Guide chapter 4, Waveform File Formats).

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.9.2 Creating Multichannel Waveform Files in Hypersignal

Methods to create multichannel waveform files in Hypersignal include the following:

1) Acquire an existing multichannel waveform file in some other format using the File Acquisition function (see Hypersignal-Macro Series Users Manual section 4.1.1, Acquiring Waveforms From Disk Files, or Importing Waveform Files in Hypersignal).

2) Acquire data multichannel continuously to disk, in real-time, from a supported DSP/Analog hardware type (see Hypersignal-Macro Series Users Manual section 4.1.2, Acquiring Waveforms From DSP/Acquisition Hardware, or Acquiring Waveforms From DSP/Analog Hardware in Hypersignal).

3) Run an external program that, after performing whatever processing for which it was intended, writes multichannel output directly to a waveform file (see Signalogic DSP Software Reference Guide chapter 4, Waveform File Formats).

Related Topics

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.9.3 Creating Frequency Domain Waveform Files

Only the FFT Generation function creates frequency domain waveform files directly in Hypersignal. The Difference Equations function could also be used, with careful attention to framesize and organization. If you need to create frequency domain files external to Hypersignal, say for example to specify real and imaginary waveform files upon which an Inverse FFT Generation can then be executed, see Hypersignal-Macro Series Users Manual chapter 5, Hypersignal Waveform File Format, or Signalogic DSP Software Reference Guide section 4.1, Hypersignal Waveform File Format. Although not difficult to generate frequency domain files via external program, you must pay attention to the "frame-based" organization of frequency domain files. One popular example of creating frequency domain files outside of Hypersignal:

Generating complex (".REA" and ".IMA") waveform files that represent the desired magnitude and *phase* response for a filter. An Inverse FFT Generation function can then produce the appropriate time domain impulse response for filtering other waveforms (via Convolution function).

3.10 Finding Waveforms in Hypersignal User Mode

As you begin to build up a large amount of waveform files during the course of your work with Hypersignal, it will become more difficult to

locate waveform files. There are three methods you can employ to aide in finding waveform files while using Hypersignal:

1) Popup directory display

2) Utilities menu function "Directory Display"

3) DOS shell

Methods of Locating Waveform Files in Hypersignal

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Finding Waveforms in Hypersignal with Popup Waveform Directory Display

Popup directory display appears during data-entry editor menus as an automatic window display in the System Status area (upper left of main menu) when a specified filename cannot be found. Also, you can

manually invoke popup directory display from inside any data-entry menu by using the 'PgUp' key.

Popup directory display includes waveform filename and extension, length, and date of creation. The search strategy for different waveform extensions and/or more specific waveform filename may be changed via consecutive use of the 'PgUp' key (see Hypersignal-Macro Series Users Manual section 3.4.2, Popup Directory Display, or Popup Directory Display in Hypersignal, above, for complete information on waveform filename extensions and the search strategy).

You may also temporarily enter "*" or "?" wildcard characters in the waveform filename field(s) to further direct a waveform search; for example a 'test*' entry would include all filenames starting with "test", and having the appropriate extension. As another example, an entry of 'x?test' would include all filenames starting with "x", ending with "test", and having any other character in between.

NOTE: To re-initialize popup directory display after you have changed the filename in the data-entry menu, or added a wildcard character ('*', '?'), *you must reposition the cursor at the beginning of the waveform filename field and 'Enter' the field*--then press the 'PgUp' key.

Related Topics

Finding Waveforms in Hypersignal with Popup Waveform Directory Display

Finding Waveforms in Hypersignal with the Directory Display Menu Iteml

Finding Waveforms in Hypersignal with the Directory Display Menu Item

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Finding Waveforms in Hypersignal with the Directory Display Menu Item

The Directory Display menu function, listed under the Utilities column heading on the main menu, offers a DOS-like directory search capability. Unless specified explicitly, the drive and subdirectory are assumed to be the current values shown in the User Setup area. Wildcard characters "?" and "*" are allowed; display is shown one page at a time. You can use the PgUp and PgDn keys to see the previous and next pages of directory display, respectively. The last page displayed also includes a "bytes free" display, showing the current number of free space (in bytes) for the current drive. Because of the capability to page backwards, this function is limited to about 100 total pages of display.

If you do not enter a colon (":") in the FILENAME field for the Directory Display menu selection then Hypersignal will assume the DRIVE field from the User Setup area. If you do not enter a backslash ("\") in the FILENAME field then Hypersignal will assume the SUBDIRECTORY field in the User Setup area. Explicitly entering the ':' and/or '\' characters overrides the assumed User Setup values.

For convenient reference, below are listed the basic waveform filename extensions used by Hypersignal:

Table 5 Partial List of Hypersignal Waveform Filename Extensions

filename.TIM:	Time domain waveform data file
filename.FRQ:	Frequency domain magnitude file
filename.PHZ:	Frequency domain phase file

filename.PWR: Frequency domain power spectra file

filename.REA: Frequency domain complex real file

filename.IMA: Frequency domain complex imag file

Related Topics

Finding Waveforms in Hypersignal with Popup Waveform Directory Display

Finding Waveforms in Hypersignal with the Directory Display Menu Item

Finding Waveforms in Hypersignal with the Directory Display Menu Item

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

Finding Waveforms in Hypersignal with the Directory Display Menu Item

Of course, for the most complete file directory service, including all command-line switches offered by DOS in conjunction with the "DIR"

command, you can temporarily "shell out" of Hypersignal to the DOS command line ('F10' key)--but you can only do this from the main menu, and not from inside data-entry menus. Also, when you do this, remember two things:

1) The current DOS path (drive and subdirectory) will most likely be something else than where your waveforms are located. If you change the current DOS path while in the DOS shell, and the RESTORE DOS PATH field in the External Program Configuration menu is disabled, *be sure and change it back.* Otherwise, Hypersignal may read an unwanted configuration file from the new DOS path upon returning. See Hypersignal-Macro Series Users Manual section 3.6, Invoking External Programs and the DOS "Hot-Key", or section 3.7.1, DOS Shell in Hypersignal User Mode, above, for detailed information on the subject of changing the DOS path during DOS shell execution.

2) Type 'Exit' to return to the Hypersignal main menu once you are done in the DOS shell.

Related Topics

Finding Waveforms in Hypersignal with Popup Waveform Directory Display

Finding Waveforms in Hypersignal with the Directory Display Menu Item

Finding Waveforms in Hypersignal with the Directory Display Menu Item

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal
Creating Waveform Files in Hypersignal
Finding Waveforms in Hypersignal User Mode
Running Macro Programs in Hypersignal

3.11 Running Macro Programs in Hypersignal

Hypersignal macro language programs can be invoked in three ways:

1) In user or engine mode, from the Macro Manager menu.

2) By invoking Hypersignal from another application, program, or batch file. Hypersignal can be invoked in either user mode or engine mode.

3) By "chaining" to the end of a previous macro program.

Methods of Invoking Hypersignal Macro Programs

General Topics

Command-Line Interface to Hypersignal
Keyboard and Mouse Interface In Hypersignal User Mode
Online Help In Hypersignal User Mode
Main Menu in Hypersignal User Mode
Data-Entry Editor in Hypersignal User Mode
Printing Menus and Waveform Displays in Hypersignal User Mode
Running External Programs in Hypersignal
Configuration Files in Hypersignal
Creating Waveform Files in Hypersignal
Finding Waveforms in Hypersignal User Mode

3.11.1 Running a Macro Program From the Hypersignal Macro Manager Menu

In user mode, the 'F3' key is used to configure and execute (if ready) a macro from the main menu. When the 'F3' key is pressed, the Macro Manager menu appears, which works like any other Hypersignal data-entry menu, even though it is not listed under one of the three main menu column headings. When the 'Enter' key or a mouse button is pressed while the cursor is on the last field (or the 'ctrl-Enter' key sequence is pressed at any time) when this menu is displayed, the current macro specified in the MACRO FILENAME field is compiled (if needed) and then executed. Input parameters (if any) used by the macro are also specified in the Macro Manager menu, as is the compiler mode and pathname information needed to find the macro file. Pressing the 'Esc' key from the Macro Manager menu will not execute the currently specified macro. Online Help is available as usual by pressing the 'F1' key.

Depending on the current macro compiler mode specified in the Macro Manager, the macro may or may not be compiled before it actually executes. The macro compiler can be in one of three possible modes: 1) always compile, 2) compile only if necessary ("make mode"), where the macro source code file is only compiled if its date stamp is later than that of the macro object code file, and 3) never compile (use existing macro object code). The software default is the make mode.

Note that the Macro Manager method of running macro programs may also be used if Hypersignal is operating in engine mode. In this case, the external controlling application must send simulated keyboard commands to first invoke the Macro Manager menu, and then set up and execute the desired macro program. DSPower-Block Diagram software uses this technique when re-submitting a macro program (generated for one or more Hypersignal blocks) to a copy of Hypersignal software already active. This method avoids time spent unloading and loading. Also, if the macro program does not need re-compiling, more time is saved if the built-in Hypersignal compiler is instructed to use the "make mode" described above.

All status (and error messages) concerning macro compilation and execution are displayed in the System Status area (upper left of main menu).

Note that up to 6 (six) input parameters can be specified in the Macro Manager. These input parameters can be used to pass input and output filenames, data-entry menu parameters, and numeric values to a macro, allowing it to be used for different waveforms without modification. Also, the descriptive menu labels can be customized for these parameters for each macro--see the ".MCF" file, below.

For any given macro, Hypersignal keeps track of three separate filename extensions:

1) Source file extension, which defaults to ".MAC", but can be otherwise if specified explicitly in the Macro Manager menu MACRO FILENAME field.

2) Object file extension, which is always ".MXE".

3) Configuration file extension, which is always ".MCF". The configuration file contains all Macro Manager menu entries for the macro in ASCII text form, and is saved whenever the macro is executed. Since this file is in ASCII form, it can be edited in order to customize the input parameter field labels--see Hypersignal-Macro Series Users Manual section 4.10.1.2, Parameter Passing From the Macro Manager Menu.

See Hypersignal-Macro Series Users Manual chapter 7, HYPERSIGNAL MACRO LANGUAGE, for detailed information on all aspects of macros and the macro language.

NOTE Hypersignal searches for all macro files only on the path (drive and subdirectory) specified in the Macro Manager menu. The User Setup path, or any other Hypersignal path, is not considered.

Related Topics

Running a Macro Program From the Hypersignal Macro Manager Menu

Running a Macro Program From Outside of Hypersignal

Running a Hypersignal Macro Program from Another Macro

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.11.2 Running a Macro Program From Outside of Hypersignal

To invoke a macro from outside of Hypersignal, the macro source filename is passed as a command-line parameter in the HSxxxxx.EXE file specification. Hypersignal first ensures that the macro source file exists, and, if so, looks for a macro configuration file (see below) with which to initialize the Macro Manager menu, and then starts the macro. See section 3.1 above, Command-Line Interface to Hypersignal, and section 3.1.2, Command-Line Examples of Running Hypersignal, for more information and examples of command-line parameter specifications. Note that the macro language contains "Abort" and "Exit" commands that allow the program to return from Hypersignal back to the caller, completing a "remote execution" of a macro.

This technique is used by DSPower-Block Diagram software when executing one or more Hypersignal blocks from its block diagram user environment. See User Mode and Engine Mode in Signalogic DSP Software System Guide section 1.1, Relationship of Signalogic DSP Software Components.

Related Topics

Running a Macro Program From the Hypersignal Macro Manager Menu

Running a Macro Program From Outside of Hypersignal

Running a Hypersignal Macro Program from Another Macro

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.11.3 Running a Hypersignal Macro Program from Another Macro

The Macro Manager menu can be invoked from inside an executing macro program by a "Macro Manager" statement, followed by input parameters (if any), interactive commands (if any), and a standard "endfunc" statement (see Hypersignal-Macro Series Users Manual section 7.3, Invoking Hypersignal Menu Functions From Macros). Re-invoking the Macro Manager menu from within an executing macro is an advanced technique that can be used for either of two purposes, or both:

1) Allow the input parameters to the current macro to be changed dynamically. To do this, a $ESC interactive command should be entered prior to the "endfunc" statement, so that the macro does not run "recursively". Changing input parameters dynamically is not recommended as standard macro programming procedure, but could be useful in some situations.

2) To chain another macro to the end of the currently executing macro. To do this, a "Macro Manager" statement, followed by the appropriate new macro filename, any input parameters needed, and an "endfunc" statement, should be entered in the macro as the *last* executable macro command.

Related Topics

Running a Macro Program From the Hypersignal Macro Manager Menu

Running a Macro Program From Outside of Hypersignal

Running a Hypersignal Macro Program from Another Macro

General Topics

Command-Line Interface to Hypersignal

Keyboard and Mouse Interface In Hypersignal User Mode

Online Help In Hypersignal User Mode

Main Menu in Hypersignal User Mode

Data-Entry Editor in Hypersignal User Mode

Printing Menus and Waveform Displays in Hypersignal User Mode

Running External Programs in Hypersignal

Configuration Files in Hypersignal

Creating Waveform Files in Hypersignal

Finding Waveforms in Hypersignal User Mode

Running Macro Programs in Hypersignal

3.12 Getting Waveforms In and Out of Hypersignal User Mode

This section not incorporated yet. Please see section 4.1 in the Hypersignal-Macro Series Users Manual.

3.13 Displaying Time Domain Waveforms in Hypersignal User Mode

This section not incorporated yet. Please see section 4.2 in the Hypersignal-Macro Series Users Manual.

3.14 Interactive Waveform Displays in Hypersignal User Mode

This section not incorporated yet. Please see section 4.3 in the Hypersignal-Macro Series Users Manual.

3.15 FFT Generation in Hypersignal User Mode

This section not incorporated yet. Please see section 4.4 in the Hypersignal-Macro Series Users Manual.

3.16 Displaying Frequency Domain Waveforms in Hypersignal User Mode

This section not incorporated yet. Please see section 4.5 in the Hypersignal-Macro Series Users Manual.

3.17 Waveform Generation and Mathematics in Hypersignal User Mode

This section not incorporated yet. Please see section 4.6 in the Hypersignal-Macro Series Users Manual.

3.18 DSP/Acquisition Hardware in Hypersignal User Mode

This section not incorporated yet. Please see section 4.7 in the Hypersignal-Macro Series Users Manual.

3.19 Filter Design in Hypersignal User Mode

This section not incorporated yet. Please see section 4.8 in the Hypersignal-Macro Series Users Manual.

3.20 Applying Filters in Hypersignal User Mode

This section not incorporated yet. Please see section 4.9 in the Hypersignal-Macro Series Users Manual.

3.21 Creating Macro Programs and Functions in Hypersignal User Mode

This section not incorporated yet. Please see section 4.10 in the Hypersignal-Macro Series Users Manual.

Notes: